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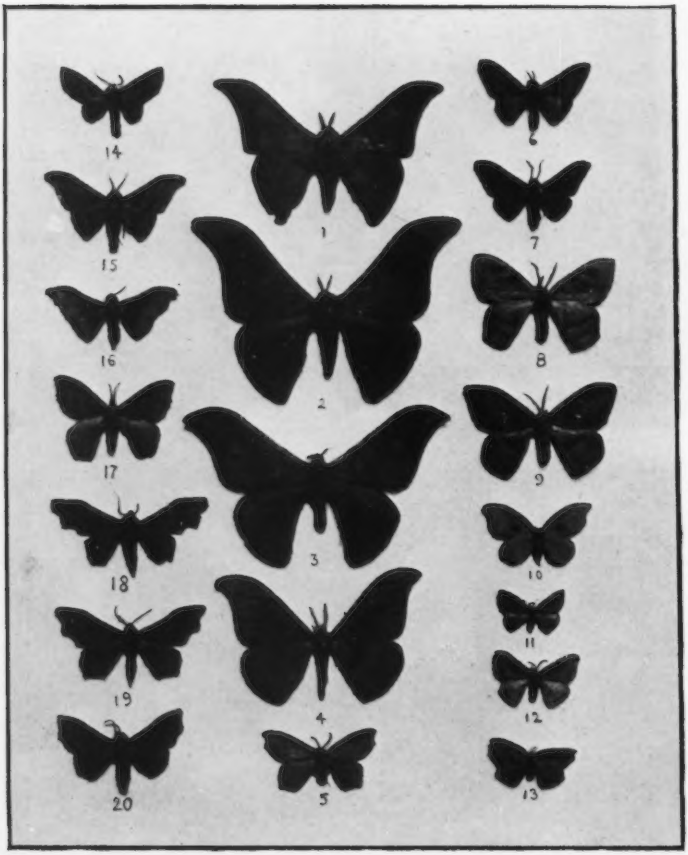

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On the Early History of the Entomological Society of Philadelphia.

[Now the American Entomological Society.]

By T. B. ASHTON, Tonganoxie, Kan.

During the Winter of 1858–59 it was my pleasure to visit the city of Philadelphia, my home being in Washington County, N. Y. I had known for some years a few persons in that city who were, like myself, interested in Entomology, and it was to enjoy their society as collectors of insects that attracted me thence. During the early part of the Winter a few of us who were quite well acquainted, talked over the advisability of forming an entomological society, that those interested in the study might be encouraged to come together, become better acquainted, and, by comparing notes and ideas, impart to each other practical information regarding the collecting of and the habits of insects, which could not otherwise be obtained, and also to benefit each other by a comparison and exchange of specimens. This consultation culminated in the issue of a call to a number of persons in the city, known to be interested in Entomology, to come together to or-

ganize a society, and, on the 22d of February, 1859, a meeting was held for that purpose at the residence of E. T. Cresson, No. 728 Erie Street, and a committee appointed to draft a Constitution and By-Laws, whose report was adopted at a subsequent meeting, the association receiving the name of "The Entomological Society of Philadelphia."

The object of the Society is set forth in Article VI. of the Constitution, which reads as follows: "Every member elected to the Society is expected to communicate, either by writing or verbally, information of the name, locality, habits, time, etc., of insects taken within the United States of America, the same to be recorded in books kept for that purpose, and open to the inspection of members." The financial support of the Society was provided for by Article II. of the By-Laws, viz.: "Every member elected to the Society shall pay to the Treasurer an initiation fee of 50 cents, and shall be subject to a monthly contribution of 6 cents, payable at the last stated meeting of each month."

The Society consisted of the following organization members: Dr. Thos. B. Wilson, Dr. John L. LeConte, James Ridings, George Newman, T. B. Ashton, J. W. McAllister, E. T. Cresson, Henry Feldman, George Hill, Charles Wilt, John Pearsall, William Evett, J. H. B. Bland, John Meichel, Robert Jack, Wm. S. Wood, Thomas Cox, William Wolter, Chas. J. Wood, Louis Schneider, and S. H. Shinn; in all, twenty-one. The first officers elected were, President, John L. LeConte; Vice-President, James Ridings; Secretary, E. T. Cresson; Treasurer, Charles Wilt. The first member elected was Henry Ulke, and the first correspondent was Baron R. Osten Sacken.

After meeting several times at Mr. Cresson's house, the Society adjourned, by invitation of Dr. LeConte, to his residence, No. 1325 Spruce Street, where it continued to meet while I remained in the city. The Society in its early days was much indebted, financially, to Dr. T. B. Wilson, for many acts of generosity; he also donated many specimens of the various orders of insects to its collections. All the members seemed to take an active interest in its affairs, and did the best they could to promote its prosperity. Among them all I remember of only two who then possessed named collections, viz.: Dr. LeConte and Mr. Ulke, and they were confined to Coleoptera. Most of the members were good collectors, had many fine specimens, and

possessed much practical knowledge of the habits of insects ; but only a few knew anything regarding their structure or classification, except in a general way. In nationality the members were English and German, with a few Americans ; the former seemed partial to Lepidoptera, the Germans to Coleoptera, while the Americans as a rule were more inclined, I think, to take an interest in all the orders, and to make general collections. All were most willing and ready to exhibit their captures and impart knowledge of the same at the meetings of the Society, and also to show to interested parties the many rare and beautiful treasures in their cabinets. Occasionally the Society was honored at its meetings, during my stay, by visitors of note from a distance, among whom I remember Professor S. F. Baird, secretary of the Smithsonian Institution, an enthusiastic naturalist ; Baron R. Osten Sacken, of the Russian Legation at Washington, then the only known Dipterologist in the country ; Dr. Brackenridge Clemens, of Easton, Pa., the eminent micro-lepidopterist; and the members were pleased to meet them and make their acquaintance.

In the Spring of 1859 I returned to my home in northern New York, and have never had the opportunity again of attending any of the meetings of the Society, and but once have I had the pleasure of seeing its collections, and that was many years ago. Although living far away from Philadelphia, I have always felt a warm interest in the prosperity and welfare of the Society, and cherished a life-long respect for many of its old members, with whom I have had occasional correspondence and received many entomological favors. After my return home I noticed that I did not receive from the collectors in Philadelphia as many fine specimens as I did before the formation of the Society. Rare insects were then distributed to but few persons, and I came in for a share ; but the association created a desire among the members to assist each other, and hence those living distant from Philadelphia did not fare as well in that respect as formerly. But I never regretted the part I took to bring collectors together, to know and assist each other by adding to their collections, even if my own cabinet did not receive as many additions from my Philadelphia friends, for it was more than made up from other places, indirectly through the influence of the Society. Before its formation I do not remember that I ever received, among the many boxes of insects that came to me at my home, a single one

with *named* specimens; while, after the Society was formed, specimens invariably came to me with their scientific names attached.

The growth and outcome of the few interested persons who met and organized "The Entomological Society of Philadelphia" now is, and has been for a number of years, of national importance. It has been the means, directly and indirectly, of stimulating into action a general interest and desire in thoughtful and educated persons to investigate the formation and habits of insects, and ascertain, as far as possible, the places that their numerous species fill in the economy of nature, and of circulating a knowledge respecting them otherwise difficult to obtain. And now, all over the land, there are individuals and institutions collecting and studying the habits of insects, not only as a matter of curiosity and pleasure to behold their beauty and contemplate the wisdom and forethought manifested in their construction, but of necessity to know and welcome our minute friends, and to guard against a vast host of devastating enemies.

Before the influence of the Society was felt, a few honored names like Say, Harris, Fitch, LeConte, etc.,—supposed by their illiterate neighbors to be partially insane,—had told the general public the necessity of becoming better acquainted with the life-history of Insects, and how few persons believed their teachings! But to-day both Government and State see the importance of the subject and spend their money liberally in the employment of the highest and best entomological talent to investigate, promote, and circulate all the knowledge that can be obtained in reference to Insect Life, especially of those species that are injurious or beneficial to vegetation. Surely, if our members were not wise in entomological literature and education to begin with, they certainly did a wise act in organizing "The Entomological Society of Philadelphia." Thirty-four years have passed since the Society first came into existence, and to-day as I examine the "Scientists International Directory," for 1892, for the individual names of the twenty-one persons who founded it, I feel sad to think that I can find only *two* of them, viz., Cresson and Ashton. Where are the other nineteen—have they all passed away?*

* Two of these are still *living* members, viz., James W. McAllister and J. H. B. Bland; eleven are known to be dead, while the other six are not now members. If living, we do not know their whereabouts.—ED.

FIELD NOTES.

By C. W. STROMBERG, Galesburg, Ill.

In the Winter time when the entomologist has to stay at home, after his material results from his Summer's work have been arranged and labeled up, what is a greater pleasure than to get down entomological publications and go over them again and again?

Field notes are always interesting. Dr. Hamilton cannot write too often, and I think most of us must enjoy following Mr. Wickham about in his travels after Coleoptera. Messrs. Hubbard and Schwarz's articles are most instructive and entertaining, and there are many others. Such notes undoubtedly contribute towards keeping up an interest in Entomology with many of the younger and some of the older entomologists. Sometimes we come across notes on Winter collecting. I have been quite successful at that season of the year in the past, and will mention a few items.

In an old hollow sugar-maple which stood near the edge of a strip of woods which was comprised mostly of blue ash and white elm, and which was bordered on one side by a piece of prairie, the following species of Coleoptera were taken: In the first place the fine rotten wood in the bottom (inside) was raked out and examined, which yielded more than a dozen specimens of *Aphodius oblongus* Say, a large number of *Dendrophilus punctulatus* Say, five specimens of *Corymbites sulcicollis* Say. After the dust was examined a large portion of the heart of the tree, which was loose and honey-combed,—*i.e.*, eaten by ants and other insects,—was broken into bits over a piece of cloth. It yielded several specimens of *Adelocera impressicollis* Say, two specimens of *Adelocera marmorata*, and one specimen of *Adelocera avita* Say. The only specimen I have ever seen. There were more than twenty specimens of *Thaneroclerus sanguineus* Say, two specimens of *Clerus ichneumonius* Fab., three specimens of *Dermestes lardarius* Linn., *Tenebrio castaneus* Knoch, and *T. tenebrioides* Beauv. several of each. Next in order was the outside of the base, which had not been molested so far. The bark was loose at the edges, and each large flake seemed to be partly kept in place by a large amount of spider-web, white patches, egg-sacks, etc., which are *generally* found about old trees. When this was

removed a sight met my eyes which was beautiful to behold, especially since it was my first experience with *Clerus ichneumonius* (with exception of the two specimens taken from the inside). Under every piece of bark around the whole tree for three feet up were patches covered with this beetle. It was in the month of February, and, though the sun was quite warm, the beetles were slow to show life; a few around the outer edges were dead, but they were imbedded to some extent in bits of spider-web, and had probably been entangled in previous seasons. Under the bark were a few more *Adelocera impressicollis;* some of the common Tenebrionidæ found at this season, and *Catogenus rufus.*

Other hollow trees were examined in the vicinity, but yielded only a few specimens of *Aphodius oblongus*, *Dendrophilus punctulatus* and *Corymbites sulcicollis.* These are nearly always found among the dust. Whether they have been disturbed by squirrels or jarred down is hard to tell, but one would suppose that the latter species would be found clinging to the wood.

I have often been surprised at the gregarious habits of certain Carabidæ. What is there about a log or depression in a piece of woods that attracts insects of a certain species in great numbers, when you might hunt in vain in similar situations in the same piece of ground? *Pentagonica flavipes*, var. *bicolor*, is not a common insect. One day in October, some two years ago, I examined a depression (in ground) near a charred log. The place was not over five feet in diameter, but it yielded more than thirty specimens of *Pentagonica;* thirty-nine were taken altogether, but the others were a few feet away near another log.

Almost in the same way I took (several years ago), near one small log which was partly imbedded in the earth, upwards of fifty specimens of *Lebia viridipennis*, a species that had seemed rare till then. The same fall I took enough of *Lebia ornata* (near one log) to nearly fill a 4-drachm bottle, a species that is always common, however.

At another time a friend turned up a nest of *Clivina impressifrons.* It was in the early Spring. They were clinging to the underside of a log which was very deeply imbedded in black soil. In such situations it is quite a rare thing to find Coleoptera, except along the edges, but here there were Clivinas (closely crowded) on a space not larger than one's hand.

Leptotrachelus dorsalis Fab. is not an abundant insect, but I found a spot once (late in fall), in a moist piece of woods, where they were in unlimited numbers under and among wet leaves. In the same region nearly a thousand specimens of *Platynus basalis* were taken on less than an acre of ground. Here, too, *Lathrobium armatum* Say was abundant; nearly every log and bit of bark turned over yielded specimens. Many other species were abundantly represented.

———o———

The Nest and Parasites of XYLOCOPA ORPIFEX,* Smith.

By ANSTRUTHER DAVIDSON, Los Angeles, Cal.

In this section of Southern California four or five species of *Xylocopa* are found. This last season, while collecting with Professor Coquillett, of our National Division of Entomology, we for the first time discovered the nests of *X. orpifex* in abundance on Wilson's Peak, a mountain of 5000 feet altitude. At the time of our visits in June and August, 1892, we collected numerous specimens of the bees and their nests. While the nests do not seem to differ in many particulars from the nests of *X. virginica* as described by Packard in his well-known guide to the study of insects, yet there are numerous problems connected therewith which I wish the readers of the NEWS would throw some light upon.

I picked up one piece of wood four inches in diameter and about three feet long, and as there was but one external opening it is presumable all the cells contained therein were the work of one bee. From a diagonal entrance the tunnels were driven longitudinally a distance of three or four inches on each side. Parallel to this was another of a similar length, and a third very much shorter, the cells in all numbering twenty. The tunnel is not all of one uniform width, but is dilated in the centre of each cell, so that the tunnel measures three-eighths of an inch in diameter at the extremities, and half an inch at the centre of each cell.

The partitions are constructed in a manner apparently identical with those of *X. virginica*, but the ribbon-like coil has five complete whorls, and is one-eighth of an inch wide. After the par-

* From a paper read before the S. California Science Association.

tition is completed its angles are filled up with sawdust, and smoothed with a waxy secretion so as to make the bottom of the next cell oval or rounded. These cells have a uniform depth of five-eighths of an inch. Here I would like to ask if all the *Xylocopa* make their tunnels wider in the centre of each cell than elsewhere? I have been led to infer from the little literature I have available, that in the construction of their cells they retained some of the fragments wherewith to construct the partitions. This seems to me rather too rational even for the carpenter bee, and I thought I had solved the problem in supposing that in digging fragments for the formation of the partition the bee had unconsciously widened the succeeding cell. This theory is untenable, however, as I have found some apparently new tunnels with four or five cells constructed exactly as when filled, and besides the terminal cell is always so constructed.

I have frequently seen it stated that the *Xylocopa* turns the terminal cell towards the outer surface of the log so that the bee resulting from the egg first deposited, and presumably the first hatched, could eat its way out by a new channel. Whatever may be the habit with other bees it is certainly not so with the one in question, since all the bees here escape by the original opening in the inverse order of their deposition.

On opening many of the tunnels filled early in the season one or two of the external cells may be found empty, the bees having already made their escape. In the lower cells the bees though perfect and active, remain until the following Spring, when they break through the partitions and escape. In those built late in the Summer all seemingly remain until the next Spring.

How it happens that the bee resulting from the egg last deposited is the first to escape, when there must, of necessity, be weeks of difference in their time of deposition, is something I cannot satisfactorily account for. I am led to infer, by the fact of the external cells always containing males, and the lower ones only females, that the explanation in part lies therein. Probably the males hatch out in less time than the females or take less pollen to feed them, or it is very likely that both of these factors enter into the equalization of the incubating periods.

Fertile, though these insects are, yet on account of their many enemies and parasites, comparatively few of them reach maturity.

What the exact proportions are I regret I did not ascertain, but the number attacked by parasites was certainly very large. In one piece of wood in which were three short tunnels of two cells each, six cells in all, three cells contained bee-fly pupæ, one a Chalcid pupæ, and the remaining live bees. Although this is probably above the average, I do not think it is much so.

Chief among its enemies is *Argyramœba simson* Fab. We found numerous pupæ of this bee-fly in the cells and bred the insect.

It was interesting to observe this pupa, ever restless, with its rings of hooked hairs on its body preventing it going backward as it gradually wriggled itself through the partitions to the external opening, where it transformed, leaving its case hanging to the edge of the opening.

The other parasite found was the Chalcid, *Monodontomerus montivagus* Ashm., which deposits its eggs to the number of from ten to twenty in each cell. These do not destroy their host until it is about to transform into the pupa state, as is demonstrated by the amount of larval excrement so invariably found in the cell, for the larvæ of *X. orpifex* voids a large quantity of excrement, and while not an isolated example, as I have since discovered, I was not previously aware of bee larvæ so doing. In this, as in many other instances, some broods of *Monodontomerus* were all males, while other broods were all females.

———o———

NOTES ON THE CYNIPIDÆ.—I.

By H. F. Bassett, Waterbury, Conn.

Even the most careless observer of Nature cannot have failed to notice the swellings and deformations which exist in great variety on the buds, leaves, flowers, fruits, stems and roots of trees and plants, and, if not already informed, to wonder what causes them.

We call them galls, and on examination find that most of them are the home of the larvæ of insects—larvæ developed from eggs laid on the plant by the parent insect before the gall existed.

The galls are produced by insects, but the interesting question —how? will be considered at another time.

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We call them galls, and on examination find that most of them are the home of the larvæ of insects—larvæ developed from eggs laid on the plant by the parent insect before the gall existed.

The galls are produced by insects, but the interesting question —how? will be considered at another time.

The species of insects which are able to produce galls are quite numerous, and are found in nearly all the orders of this large class, but these notes will, unless otherwise stated, refer in all cases to such as belong to the order Hymenoptera, and to the family Cynipidæ.

The species of galls produced by the Cynipidæ are more numerous on the oaks than on plants of any other order; indeed, the oaks are noted the world over for the variety and abundance of the galls they produce. Our North American oaks are known to produce about two hundred species, and it is doubtful whether one-half have yet been noticed. I have gathered, at one time, from an oak standing alone in a cultivated field nine distinct species. All trees of the *same species* are not equally the producers of galls; indeed, of trees and shrubs whose branches interlace, one may be infested with thousands of galls, while the others produce none at all. Whether this is owing to what we may call the individuality of the tree that is found to be favorable or otherwise—for trees of the same species *have* individual traits, no two being alike—or whether a tree that the gall-flies have once attacked is, thereafter, more susceptible to the influences that produces the galls, or whether it is due to entirely different causes is not yet known.

I have studied the oaks with special reference to this subject and find that colonies of gall-flies are more or less persistent, some having been known to me for fifteen or twenty years and still existing. In one case I found that the Summer brood, hatched from leaf-galls, laid its eggs for the next generation in the bark of the large roots of the tree on which they grew, and that when the insects from the root-galls appeared they laid their eggs in the buds of the same tree.

I have taken at one time, more than fifty of these last in the act of egg-laying in the buds of two or three oak sprouts that sprung from a common root and were not much higher than my head. Other clumps of oak bushes a few feet distant furnished none at all.

This and some other facts of the same sort show that the female gall-fly discerns a special fitness for her work in certain trees, but does not show in what it consists. It is possible that the size and shape of the oak buds, which differ considerably on different trees, may have some influence in determining the insect's choice for

such species as lay their eggs in the buds. As these insects are generally winged, their localization does not depend upon their inability to reach other trees.

The Cynipidous galls are by no means confined to the genus *Quercus*, as a considerable number of species are found on plants belonging to the order Rosacæ—the blackberry, raspberry, wild roses and the genus *Potentilla*. The order Compositæ, and some others, also, furnishing gall-producing plants.

There are a vast number of galls on various kinds of trees and plants that are not produced by hymenopterous insects. These mostly belong to the order Diptera, and the family Cecidomyæ. In the perfect state they have two wings, and the larvæ are easily distinguished from the Cynipidæ. I mention this fact lest it be thought by the beginner in the study that these have been overlooked. Many kinds belonging to this class are sent me every year, and the senders are probably disappointed when I inform them that all the time I could devote to the study of galls for almost thirty years, not much it is true, has not enabled me to do more than begin the study of the hymenopterous galls, and that I have not even attempted to study those of other orders, which are no doubt equally interesting and equally difficult.

Baron Osten Sacken, in his first article, "On the Cynipidæ of the North American Oaks and their Galls," published in the first volume of the "Proc. of the Ent. Soc. of Phila., Oct., 1861," writes as follows on the study of the gall-flies: "The difficulties attending the study of the habits of the Cynipidæ are so great, the peculiarity and, I may say, the intricacy of their habits is so extraordinary, that the most important questions concerning them remain unsolved. The chief reason of the difficulty of this study is the close and persistent observation of nature it requires. Here, it is not sufficient to collect at random, in order to work out at leisure the material thus obtained; here one has to watch the growth of the gall on the tree for weeks and months; in order to be enabled to make certain observations one is bound to a certain season of the year and a certain locality, and if the season is missed or the locality cannot be reached at the requisite time, one has to wait a year before observations can be renewed." All this, and more, is true; still, the history of these little insects so far as yet known is so marvellous, that no difficulties, however great, can deter one who has begun the study of their habits.

Some of the "unsolved questions" referred to by Baron Osten Sacken have, since he wrote, been solved, or a way to their full solution discovered, but fields vast enough for a life-time of study remain to be explored.

THE Sugar Ant (*Formica omnivora* Linn.) appeared about the year 1760 in Barbadoes, and caused such devastations that, in the words of Dr. Coke, "it was deliberated whether that island, formerly so flourishing, should not be deserted." In 1763, Martinique was visited by these devastating hordes; and about the year 1770 they made their appearance in the island of Granada. Barbadoes, Granada and Martinique suffered more than any other island from this plague. Granada, especially, was reduced to a state of the most deplorable desolation; for, it is said, their numbers there were so immense that they covered the roads for many miles together; and so crowded were they in many places, that the impressions made by the feet of horses, which traveled over them, would remain visible but for a moment or two, for they were almost instantly filled up by the surrounding swarms. * * * Notwithstanding the myriads that were destroyed by fire, water, poison and other means, the devastations continued to such an alarming extent, that in 1776 the government of Martinique offered a reward of a million of their currency, for a remedy against the plague; and the legislature of Granada offered £20,000 for the same object; but all attempts proved ineffectual, until the hurricane in 1780 effected what human power had been unable to accomplish.—*Cowan's Curious Facts.*

THE Kermes-dye, or scarlet, made from the *Coccus ilicis* Linn., an insect found chiefly on a species of oak (*Q. ilex*) in the Levant, France, Spain and other parts of the world, was known in the East in the earliest ages, even before the time of Moses, and was a discovery of the Phoenicians in Palestine. *Tola*, or *Thola*, was the ancient Phoenician name for this insect, and dye, which was used by the Hebrews, and even by the Syrians. To the Greeks this dye was known under the name of *Coccus*, as appears from Dioscorides and other Greek writers. From the epithets *kermes* and *coccus*, and that of *vermiculus* or *vermiculum*, given to the Kermes in the middle ages when they were ascertained to be insects, have sprung the Latin *coccineus*, the French *carmesin*, *carmine*, *cramoisi* and *vermeil*, the Italian *chermisi*, *cremisino* and *chermesino*, and our *crimson* and *vermillion.*—*Cowan's Curious Facts.*

IN the "American Naturalist" for April (p. 400, 1), Mr. Nathan Banks holds that the maxillæ of insects represent the first maxillæ plus the maxillipedes of the Chilopods, and that the labium of insects equals the second maxillæ of Chilopods. He also suggests that the meso- and metathorax of insects are each composed of two segments, so that the entire thorax would consist of five segments, whereof one, three, and five bear legs, while two and four are provided with wings.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Owing to low subscription rate, "extras" will be charged for, and when they are wanted, it should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

THIS number contains forty pages.

SEE change of wording in regard to Identification of Insects for subscribers page 160.

PICTURES FOR THE ALBUM OF THE AMERICAN ENTOMOLOGICAL SOCIETY have been received from Prof. Edwin Alonzo Popenoe, Rev. John Davis, Ernest J. Oslar, Prof. G. H. French, Charles Robertson, Dr. W. G. Dietz, Dr. C. V. Riley, Prof. Clarence M. Weed, T. D. A. Cockerell and Prof. J. W. Toumey.

WE have lately had a very pleasant visit from Mr. Chas. Robertson, of Carlinville, Ill., who has been looking over the part of the collection of the Society in which he is interested. He has been studying for some years the relationship existing between flowers and insects.

KUNCKEL D' HERCULAIS maintains that the two tints of the locust, rose and yellow, are merely indicative of different ages, not of two varieties as generally supposed. The interest of his observation lies in his conclusions that the change of color is associated with the histolysis and histogenesis which accompany the moults. The considerable dependence of their color on the presence of light was also brought out by breeding some in darkness.—(*Comptes Rendus*, cxiv. 240.)

SOME few years ago I sent to Mr. B. Neumoegen, of New York, a number of *E. impersalis*, all dark, showing no light markings "as in var. *didyma*." I believe he afterwards named them as a new variety, which is, no doubt, correct, as I looked through the South Kensington Museum, in London, and they haven't it. Those I sent were all males; this season I have taken quite a number, and amongst them is one ♀, thereby establishing the fact that the variety exists in both sexes. I would say to those who have not seen this beautiful and striking variety, that the entire moth is a rufous-brown, or, to make it plain, is the color of the *dark markings* of the typical moth without any of the light markings.—J. T. MASON, Houston, Texas.

NICHOLAS has made some experiments at Mount Ventoux on the retardation of the date of hatching in Hymenoptera, produced by high altitudes. His results are as follows:

At the height of		20	metres	the	retardation	amounted to	0 days.
"	"	600	"	"	"	25	"
"	"	860	"	"	"	41	"
"	"	1253	"	"	"	69	"
"	"	1400	"	"	"	83	"
"	"	1700	"	"	"	98	"
"	"	1912	"	"	"	117	"

—(C. R. Ass. Franc., 1891, pt. 2., 566.)

W. H. HUDSON records a new case of mimicry from La Plata, on the part of a grasshopper (*Rhomalea*), which resembles a wasp (*Pepsis*). This wasp is, like all its allies, protected by its sting; but it is also furnished with stink glands, which emit a most disagreeable odor. When on the wing the grasshopper becomes the facsimile of the wasp; moreover, when taken in the hand, it has the curious habit of suddenly curling the body round, as a wasp does to sting. The same author has an interesting chapter on dragon-fly storms. In the Summer and the Autumn thousands of these insects may be seen flying in a northeasterly direction at the extraordinary speed of seventy or eighty miles an hour, evidently in the utmost terror, before the *pampero*, a cold, dry, exceedingly violent wind.—(*Naturalist in La Plata*, 127.)

NOTES ON SYNCHLŒ CROCALE Edw.—A note was published by the writer in "Can. Ent." (1892, p. 198) on *Synchlœ crocale* W. H. Edw. Two broods of the larvæ are there recorded. On August 24, 1892, I found a small colony of larvæ of this butterfly on *Helianthus* near Las Cruces. The larvæ were very small, not a half inch in length; this finding conclusively indicates a third brood for southern New Mexico. The food-plant of this butterfly here is *Helianthus annuus*.—C. H. T. TOWNSEND.

SCHIZURA IPOMEÆ Doubl.—On July 11, 1892, the larva of *Schizura ipomeæ* Doubl. was found on a round-leafed leguminous tree, *Cercis occidentalis* Torr., in the Grand Cañon, Arizona, 2500 feet below the rim at Hances. It was feeding of the leaves. The colors of the larva assimilated in a striking manner with the green of the leaves and the dark gray of the bark, as it clung to the twigs when not feeding. This is apparently a new food-plant for the species. The larva was determined by Dr. Packard.—C. H. T. TOWNSEND.

COMMONWEALTH OF MASSACHUSETTS, STATE BOARD OF AGRICULTURE. —GYPSY MOTH DEPARTMENT.—The committee in charge of this Department desires to again call your attention to the danger which menaces the orchards, gardens, shade trees, parks and woodlands of Massachusetts by reason of the presence within her borders of one of the worst insect pests of Europe.

The gypsy moth destroys the foliage of fruit, shade, and forest trees, and of bushes and vines, and feeds upon many vegetables. It is far more destructive than the tent caterpillar or canker-worm, as its ravages cover the entire period of the Summer. In Medford it kept fruit trees stripped throughout the season, destroying the fruit crop, and in many cases killing the trees, notwithstanding the efforts of the people to control the pest. We mail you a report of the work done toward the extermination of the gypsy moth in 1892, issued by the secretary of this board. It contains a colored plate of the gypsy moth, and also scenes of its ravages. This will be mailed free to any address if application be made to this office.

Thus far the moth has not been seen outside of the region where it was found in 1891, notwithstanding all reports to the contrary. It possibly may have spread beyond this region, and we ask your assistance in acquainting the people with its appearance, habits, and destructiveness. As the appropriation made by the legislature for the extermination of the moth is not sufficient to admit of making a thorough search over all eastern Massachusetts, all citizens, and especially farmers, fruit growers and horticulturists, are requested to be on the alert for the appearance of the moth and to report to this office any suspected cases.—E. H. FORBUSH, *for the Committee.*

WE have received, in connection with the above, a box with glass cover and hermetically sealed, containing illustrations of the entire life-history of the gypsy moth (*Ocneria dispar*), prepared by Prof. C. H. Fernald. It contains the two sexes of the insect, both spread and in the position it assumes in life when at rest. The chrysalids of the sexes, the eggs *en masse* on the bark, and also individual eggs, the different stages of the blown larvæ are also shown. The whole makes a beautiful and very valuable educational exhibit, and Prof. Farnald and those engaged in the work are to be congratulated on the practical value which will undoubtedly result from their labors.—ED.

A PIQUANT REPAST.—The Rev. Edwin Tearle writes from Stockton Rectory, England, under date of Feb. 7, 1893: "I was greatly amused and surprised, one day last Summer, to observe a toad creep up to a fallen apple on which some wasps of the species *Vespa vulgaris* were feasting. In the most adroit manner the reptile caught seven of the insects and swallowed them, one after another, and then leisurely returned to its hiding-place under a tuft of grass, to digest the meal."—Rev. THOMAS W. TYLES, South Quebec.

IT has been suggested by several Philadelphia entomologists that bimonthly excursions should be inaugurated for the coming Summer, to go to various places of interest in the vicinity of Philadelphia in search of insects. It is to be hoped that as many as can get away from their ordinary avocations may help make these outings a success, as there seems to be little doubt but what a very enjoyable time can be had, and interesting work done. It is the intention to hold the first one Saturday, June 3d,

and continue every other Saturday during the collecting season. Atco, N. J., has been selected as the first excursion ground. All are cordially invited. The early morning train will be taken.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be **limited to twenty-five** for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

SOCIETAS ENTOMOLOGICA, vii, 16, Zurich-Hottingen, Nov. 15, 1892. —Orthoptera Centrali-Americana, Dr. H. de Saussure,—17, Dec. 1, 1892. *Pieris rapæ* in North America, J. B. Smith.

FOURTH ANNUAL REPORT OF THE MISSOURI BOTANICAL GARDEN, pp. 181—226, St. Louis, March 9, 1893.—Further studies of Yuccas and their pollination, W. Trelease, pls. 1—10, 15—23. Concerning "the relationship of the Yuccas to one another and to their pollinators, the Pronuba moths."

ANNUAL REPORT OF THE WYOMING AGRICULTURAL COLLEGE AND EXPERIMENT STATION for the year 1892. Laramie, Wy., February, 1893. —No. 7, Insecticides, F. J. Niswander.

COMPTES RENDUS. SOCIETE DE BIOLOGIE, Paris, March 4, 1893.—Note on a singular rotating movement of the head of a Culicid larva, S. Jourdain.—March 11, 1893. On the structure of the fibrillæ of the yellow muscles of *Dytiscus* and *Hydrophilus* in the state of repose, F. Tourneaux.

ZOE, iii, 4, San Francisco, January, 1893.—A new jumping spider, J. L. Curtis. Notes on Histeridæ observed in San Diego Co., F. E. Blaisdell.

ZOOLOGISCHER ANZEIGER, Leipsic, February 27, 1893.—On the developmental history of the Phytophthires, J. Krassilstschik, figs.—March 13, 1893. Note on an intercalary stage in Julid males, C. Verhoeff. Comparative anatomy and systematic position of the Phytopthires, J. Krassilstschik (cont.). Note on the parasitism of Chelifers on beetles, S. J. Hickson.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY, London, March, 1893.—The affinities and origin of the Tardigrada, Prof. J. von Kennel (transl. Sitzb. Natf. Gesell. Univ. Dorpat ix, iii, 1892). On the embryology of the mites—*Ixodes*, J. Wagner (trans. Zool. Anz. Aug. 29, 1892).

REPORT OF THE STATE BOARD OF AGRICULTURE on the work of extermination of the gypsy moth. Boston, January, 1893. E. H. Forbush & C. H. Fernald. 40 pp., 1 colored plate, 1 map, 6 photographic plates.

SCIENCE, New York, March 24, 1893.—The ravages of book worms, Dr. S. A. Green and S. Garman.

THE ENTOMOLOGIST'S RECORD, London, March 15, 1893.—New classification of the Lepidoptera-Heterocera, Dr. Chapman.

SPECIES DES HYMENOPTERES d'Europe et d'Algerie. Fondé par Edmond André, continué sous la direction scientifique de Ernest André. Fascicules 41, Jan. 1, 1892; 42, April 1, 1892.

ANNALI DEL MUSEO CIVICO DI STORIA NATURALE DI GENOVA, serie 2, x, xi, contain numerous papers by various writers, on the collections made by L. Fea in Burmah.

ANALES DE LA SOCIEDAD CIENTIFICA ARGENTINA, BUENOS AIRES, Noveber, 1893.—New Hemiptera of the Argentine and Uruguayan faunas (cont.),*† C. Berg, December, 1892. Argentine Dipterology (Syrphidæ) (concl.),* F. L. Arribalzaga.

BERICHT UBER DIE THATIGKEIT DER ST. GALLISCHEN NATURWISSENSCHAFTLICHEN GESELLSCHAFT wahrend des Vereins-jahres, 1890-91. St. Gallen, 1892.—Communications on the appearance of the "Nonnen spinner" (*Liparis monacha*) in 1890 and 1891 in Southern Germany and eastern Switzerland, C. Fenk.

CATALOGUS HYMENOPTERORUM hucusque descriptorum systematicus et synonymicus. Auctore Dr. C. G. Dalla Torre. Vol. vii, Formicidæ (Heterogyna). Lipsiæ, Sumptibus Guilelmi Engelmann. MDCCCXCIII. pp. 1—289.

TRINIDAD FIELD NATURALIST'S CLUB, i, 6. Port of Spain, February, 1893.—*Castnia licus*, a banana pest, T. I. Potter. Some peculiar types of Trinidad Rhynchophorous beetles, H. Caracciolo.

PSYCHE, Cambridge, Mass., April, 1893.—A preliminary synopsis of the harvest-spiders (Phalangiidæ) of Mississippi, C. M. Weed, pls. 11—15. Description of a new and interesting Phasiid-like genus of Tachinidæ *s. str.*, C. H. T. Townsend. Descriptions of new species and genera of West African Lepidoptera—IV, W. J. Holland. Some notes on the early stages, especially the chrysalis, of a few American Sphingidæ, S. H. Scudder. Life-history of *Orgyia gulosa* Hy. Edw., H. G. Dyar. Bibliographical notes—III, S. Henshaw.

U. S. DEPT. OF AGRICULTURE, Division of Entomology, Bulletin No. 28.—The more destructive Locusts of America north of Mexico, by Lawrence Bruner, Washington, 1893, 40 pp., 21 figs.

* Contains new species other than North American. † Contains new genera.

HISTOIRE PHYSIQUE, NATURELLE ET POLITIQUE DE MADAGASCAR publiee par Alfred Grandidier. Paris, Imprime, par autorisation de M. le Garde des Sceaux a l'Imprimerie Nationale, 4to. Vol. xx, Histoire Naturelle des Hymenopteres par H. de Saussure. Premiere partie, pp. xxi, 590, 1890. Atlas to the same—1re partie, 27 pls., 1892. Deuxieme partie: Les Formicides par M. A. Forel, pp. v. 243, 7 pls., 1891.

THE AMERICAN NATURALIST, Philadelphia, April, 1893.—An extreme case of parasitism [*Sarcoptes scabiei*], R. Hessler. Notes on the mouth-parts and thorax of Insects and Chilopods, N. Banks. Further note on the Tineid case-worm from the Grand Canyon, C. H. T. Townsend. The puparium of *Blepharipeza*, id.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

ARACHNIDA.

Araneina: *Dendryphantes æneolus* Curtis, Zoe, iii, p. 332, Calif.?

Phalangida: *Liobunum politum magnum* Weed, Psyche, vi, p. 428, pl. 15, Miss.

COLEOPTERA.

Hololepta pervalida Blaisdell, Zoe, iii, p. 337, *H. neglecta* p. 338, San Diego Co., Calif.

DIPTERA.

Tachinidæ: *Hyalomyodes*, Townsend, Psyche, vi, p. 429, *H. weedii*, p. 430, N. H., Pa.

ORTHOPTERA.

Mantidæ: n. gen. and spp., from Mex., Centr. Amer., de Saussure, Soc. Ent. vii, pp. 121—124.

ERRATA.—Vol. IV, No. 4.

Page 128, line 10, for *Trichobasis* read *Trichobaris*.
" 128, line 12, for somewhati read somewhat,
" 128, line 15, for "Ground Celery" read "Ground Cherry"
" 133, line 20, for *Luperoides* read *Luperodes*.
" 133, line 21, for *Dacoderus ægialites* read *Dacoderus* and *Ægialites*
" 142, line 29, for Packard read Kirby.
" 142, line 38, for Strecker's read Stretch's.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

MARCH, 23, 1893.

In the absence of the Director Dr. Horn, Mr. Ridings was called on to preside. Members present: Calvert, Ridings, Laurent, Skinner. Associates: Westcott, Fox and Boerner. Mr. Calvert presented to the collection of the American Entomological Society a ♀ *Fons colombia vinosa* Say, and a *Trithemis umbrata*. The latter species he said was a Tropical American one, and that the male has a band across the wings, but the present specimen, a ♀, also has the band. It is only the second such female the speaker had ever seen. The question of secondary sexual characters was referred to by Mr. Calvert, and further discussed by the members present. Mr. Fox called attention to and exhibited a new genus of Fossorial Hymeoptera. He stated that it was related to *Dinetus*, *Gastrosericus* and *Astatus*. From the two first mentioned genera it differed by the middle tibiæ having two spurs at apex, and from *Astatus* by the eyes of the ♂ being separated on the vertex. In consequence of the two spurs on the tibiæ he had decided to call it *Diploplectron*.

HENRY SKINNER, *Recorder*.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

The Puparium and Pupa of Subula pallipes Lw.

By C. H. TYLER TOWNSEND.

The descriptions which appear below are drawn from a puparium and pupal skin, from which issued a specimen of *Subula pallipes* Lw. The fly was bred by Prof. C. P. Gillette, at Fort Collins, Col., from maggots and puparia found under bark of cottonwood (*Populus* sp.).

The pupa is enclosed in a puparium formed of the old larval skin. The puparium splits dorsally on the median line down to the posterior portion of the fifth segment, where the integument breaks laterally on each side, to allow the partial escape of the pupa, the head segment having previously become wholly or partly detached. The pupa works itself more than half way out through this opening, and there remains. The fly then escapes,

leaving at least the posterior one-third of the pupal skin still inclosed within the split portion of the puparium. The description of the puparium omits mention of the head segment, which was missing. It is fully described with this exception.

Puparium: Twelve (?) jointed (there are eleven segments present), wholly of a dark brown color, slightly lighter on the tuberculous lateral edges of segments, moderately broad, considerably flattened, of a nearly equal width throughout, very slightly wider on posterior half, the posterior end rounded in outline from above. Whole surface divided off into minute plates, appearing minutely warted or scaly, the scales or plates larger in middle of segments than on the borders. Second segment (first one present) a little narrower than others, third a little wider, fourth slightly wider than third; fourth to tenth nearly equal in width, except that the eighth and ninth are very slightly wider; eleventh a little narrower at base than tenth, narrowing posteriorly, a little more than one-half as wide on hind margin as at base; twelfth or anal segment very small, short, about one-half width of hind margin of eleventh, rounded behind, hardly one-half as long as wide. Second and third segments short, third hardly longer than second, fourth one and one-half times as long as third, fourth to ninth subequal in length; tenth a little shorter, widened at sides posteriorly; eleventh a little longer than ninth. Segments 2—10, on lateral edge near middle, with a short posteriorly recurved bristle; segment 11 with a similar one on lateral edge anteriorly, and on hind margin just inside posterior lateral angle of segment with an outwardly recurved bristle; anal segment bare. Segments 5—10 with a transverse row of about ten small tubercles or papillæ on dorsum just next to anterior margin of segment, closely approximated and not extending down on sides of segments, the rows being little more than one-half as long as width of segments; same segments with a similar row of from twelve to sixteenth minute tubercles on venter, the fourth segment showing a somewhat less distinct row; segments 5—10 also each with a small rounded smooth tubercle on sides of dorsum in middle; segment 11 with a transverse row of seven such tubercles on dorsum considerably before anterior margin, the three median ones approximated and somewhat removed from the lateral pairs, and two behind these near lateral margin of segment with several more below or on lateral margin; all the tubercles of transverse row, except the outer one on each side, are larger than the lateral ones. Eleventh segment anteriorly bulged ventrally on median portion, with a transverse stigmatal slit a little longer than one-half width of segment, the anterior edge of slit being armed with eight teeth; two small tubercles just anterior to each end of slit; stigmata apparently opening in slightly hollowed portion behind the slit. Length (of the eleven segments), 8.5 mm.; width of second segment, 2 mm.; of ninth segment, 2 3-5 mm.

Pupa.—Pupal skin whitish on abdominal portions; head; thorax, and wing cases more glassy, subtransparent, thoracic dorsum and cephalic horns with a slight brownish flavous tinge; transverse dorsal rows of bristles on abdominal segments brownish flavous. Head with one pair of cephalic horns (antennal cases) running straight out laterally and curved upward, set opposite to each other squarely base to base, rather long, thickened on basal one-third or hardly more, annulate on remaining portion, there being eleven quite distinct annulæ or segments, the two basal ones a little longer than the others, the horns therefore consisting of twelve joints including the elongate thickened basal joint comprising one-third their length, and corresponding to the joints of the antennæ of the adult fly. Head conforming to shape of eyes and head of adult fly, neck constricted. Thorax a little narrower anteriorly than head, gradually widening posteriorly to about same width as head; wing cases moderately narrow, reaching a little beyond middle of third abdominal segment below, the leg cases reaching nearly to middle of fourth segment; scutellar segment indistinct, appearing as a portion of thorax behind; first abdominal segment bare, hardly as long as following segments; other abdominal segments nearly equal in length, the anal segment a shortened, narrowed and rounded terminally. Segments 2—7 each with a transverse dorsal row of perfectly appressed spine-like bristles directed posteriorly, the rows being a little approximated to posterior margin of segment, especially on segments 4—7, while the row on second segment is almost in middle; each long bristle in the rows is surrounded at base by several shorter, closely approximated bristles about one-half its own length; the longer bristles average somewhat more than one-third the length of the segments. Segment 8 bare; all the segments bare on venter; prothoracic spiracle on anterior lateral margin of thorax; mesothoracic spiracle immediately at base of wing cases; metathoracic spiracle at anterior lateral corner of dorsum of scutellar segment. Abdominal segments 1—7 with a spiracle on lateral edge of dorsum approximated to anterior margin. Spiracles are of a slightly flavous tinge. Length, 6 3-5 mm.; width of thorax, each nearly 1 mm.

The fly escapes by the pupal skin; splitting along the median dorsal line of the head and thorax as far back as the scutellar segment, beginning just above the base of cephalic horns; and by a break starting from the same point and extending obliquely down and outward laterally on sides of head to junction of head and thorax, a triangular piece of the anterior portion of the integument of the head being thus left attached to bases of cephalic horns on their upper side. Long sections of the tracheal integument are left attached to the prothoracic and metathoracic spiracles on the inside, these being sloughed from the tracheæ at the same time that the fly escapes from the pupal skin.

COLORADO CYNIPIDÆ.—(Continued.)

By C. P. GILLETTE.

NEUROTERUS.

N. congregatus n. sp.

Galls occurring in terminal and probably axial buds. The twig expands next to the bud, and within the bud develop a number of little globular capsules covered and surrounded by a hairy or woolly growth. The capsules themselves resemble very much those of *N. vesicula* Bass. I have four of these gall clusters that measure from 6 to 8 mm. across, and each is composed of from ten to fifteen of the little globular capsules. After the flies have eaten out of the capsules the gall-cluster reminds one of the rose to a watering pot.

Gall-flies black, feet and antennæ brown, length 2 mm; all males.

Head black, shining, with a very fine crackled appearance; eyes large and prominent; face narrow and rectangular in outline, the inner margins of the eyes as seen in front being straight and parallel; mandibles reddish yellow, ocelli rather prominent and slightly elevated. *Thorax* smooth and shining, with the fine crackled appearance common to the genus, without any signs of parapsidal or other grooves, and with a broad notch at the base of the scutellum; scutellum without foveæ, but with a shallow basal groove, shining, and with the crackled appearance indistinct, especially on the central portion. *Abdomen* petiolate, black. *Feet* dark brown, light at the joints. *Wings* 3 mm. long, radial cell long and narrow, radial nervure almost attaining the costal margin, cubital nervure faint, and hence the areolet rather indistinct, all the nerves dark brown. *Antennæ* 14-jointed, joints 1–3 and often the basal portion of the fourth light yellow, remaining joints brown or blackish; first and second joints robust, third as long as fourth and fifth together.

Described from twenty bred flies from galls taken at Manitou, Col., May 8, 1892. All of the flies hatched before May 17th.

N. virgens n. sp.

Galls.—This species can hardly be said to produce a gall. The cells of the flies were found in the Spring of the year in twigs of the last Summer's growth. The twigs are usually slightly swollen where the cells occur, but not enough to attract attention. I should not have noticed them at all had I not seen dead twigs with numerous small punctures in them, from which flies had escaped during previous years.

Gall-fly black, with the first three joints of the antennæ yellowish brown. Length 1.5 to 2 mm.; all females.

Head black and shining; under a power of seventy-five diameters the surface has a finely crackled or scaled appearance as has also the mesothorax; ocelli medium in size, face with median ridge; antennæ 13-jointed, gradually thickened to the tip, first three joints yellowish, third

joint longest, first and second joints much thickened; mandibles reddish, but black at the tips; mesothorax shining, without parapsidal grooves, broadly notched at the base of the scutellum; scutellum with shallow groove at base, the surface appearance the same as that of the thorax and head. *Wings* a little longer than the entire body, radial nervure long and narrow, areolet medium in size, radial nervure reaching, or nearly reaching the costal margin. *Feet* with tarsi yellowish brown, tibiæ usually of the same color, but in some cases almost black, femurs blackish in the middle and sometimes almost entirely black, coxæ always black at the base, but light at the tip.

Described from eighteen flies, all females, reared between the 8th and 13th of May from galls taken at Manitou, May 8, 1892.

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A New Genus and Two New Species of Limacodes-like Moths.

By Dr. A. S. Packard, Providence, R. I.

When visiting the late Professor Poey, in Havana, in March, 1886, he very kindly presented me with a pure snow-white *Limacodes*-like moth, together with its cocoon, also chalky-white. It was not described by Walker, and nothing like it was to be seen in the collection of the British Museum, for the opportunity of examining which, in 1889, I am indebted to Dr. Günther and Mr. A. G. Butler. It appears to be an undescribed genus, and one of much interest, since afterward Mrs. Slosson captured several specimens (3 ♂, 1 ♀) of a closely allied species in February and March, 1891, at Punta Gorda, which is on the west coast of southern Florida. The genus, therefore, appears to be Antillean, with a foothold in the southern extremity of Florida, and this adds another to the interesting series of West Indian forms which have probably been transported by oceanic currents across the Gulf, either from Cuba or from the Spanish Main.

The genus is more nearly allied to *Heterogenea* than to *Limacodes*, or the forms such as *Euclea*, *Empretia*, or *Phobetron*, whose larvæ are spiny.

Eupoeya n. gen. ♂ and ♀.—The head is much as in *Heterogenea pallida*, but not quite so wide. The palpi are unusually small and slender, and are extended horizontally, but not reaching the front so as to be seen when the moth is examined from

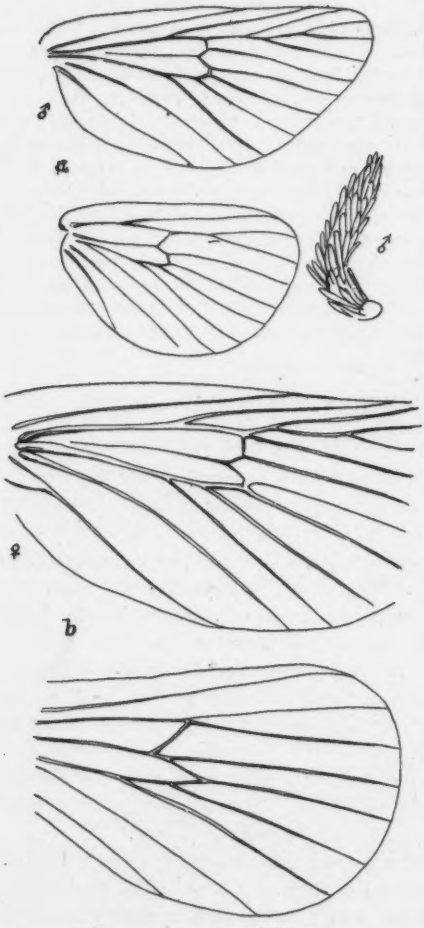
above; the third joint is very small, slender, short, not one-third as wide as the second. The ♂ antennæ are well pectinated, the branches extending to the tip, where they are unusually long, being longer at the end than in *Sisyrosea*, and more as in *Lagoa;* the branches are also unusually scaly.

The fore wings are more regularly triangular in outline than usual; the costa is unusually straight, and the apex is unusually pointed. The wing is not quite so wide as in *H. pallida*, and the outer and inner edges are more continuous, the outer angle being less marked than in *H. pallida*. The hind wings are a little more elongated, more produced towards the apex than in *H. pallida*. Venation: nearer to that of *Heterogenea* than any other genus. In the fore wings, compared with those of *H. pallida*, the second subcostal branch does not arise at the origin of the anterior discal vein, as in *H. pallida*, but originates either one-third or over half way between the origins of the first and third branches; the fifth branch is short, and not detached at its origin from the main vein, as in *Heterogenea pallida*, there being in *Heterogenea* two independent veins. The arrangement of the discal veins is as in *Heterogenea*, and the four branches of the median vein are much as in *Heterogenea*. Hind wings: nearly as in *Heterogenea*, but the two branches of the subcostal may originate at the base or origin of the anterior discal vein (*E. nivalis*), or two-thirds of the way to the apex (*E. slossoniæ*); in *Heterogenea pallida* the two branches are separate at their point of origin, the second subcostal vein being independent. The median and other veins are much as in *Heterogenea*.

The legs are rather short and with long scales, being more hairy than usual; the tarsi are a little shorter than in *H. pallida* and more hairy. The abdomen is slender, but the genital armature thicker than in the ♂ *H. pallida*.

The genus is named in honor of the late distinguished Cuban zoologist. (*Poeya* Bourg. is a genus of molluscs.) This genus need not be confounded with *Heuretes picticornis* G. & R., from the West Indies, the type of which is in the American Museum of Natural History, and which I have, thanks to Mr. Beutenmüller, examined. It differs in the shape of the wings and in the more broadly pectinated antennæ. Neither is it *Limacodes cretacea* or the Cuban *Phryne immaculata* Grote (Proc. Ent. Soc. Phil., v, 246.).

Eupoeya slossoniæ n. sp. 3 ♂, 1 ♀.—Pure virgin snow-white, with no markings on the head, body, or wings. The pectinations of the antennæ dusky, but with snow-white scales above. Palpi white, third joint white, but the first and second are blackish on the outside. The thorax and abdomen are white above and beneath. Both pairs of wings are glossy satiny snow-white above with no stains or discolorations whatever on the costa or elsewhere. But the fore wings on the under side are dusky on the costa, the smoky scales mixed with fine subochreous scales; dusky scales are scattered over the apex and down along the outer edge. Hind wings white beneath with fine, dusky scales along the outer edge, but the long uneven fringe of both wings is white.



a, EUPOEYA SLOSSONIÆ; *b*, E. NIVALIS.

Length of body ♂ 7 mm.; length of wing, 10 mm.; expanse of wings, 22 mm.

Respectfully dedicated to Mrs. Annie Trumbull Slosson in recognition of her general interest in Entomology, and of her exact and critical knowledge of many of our Bombyces.

Eupoeya nivalis n. sp. 1 ♀.—Comparing one with a female *E. slossoniæ*

in Mrs. Slosson's collection, the Cuban moth is much larger, the body being twice as thick, while the antennæ have shorter pectinations; also the palpi are larger and project farther in front. The shape of the head and front is the same in both. The fore wings are entirely white at base of costa above and beneath, where in *E. slossoniæ* it is brown. There are brown hairs on the breast, as in the other species. The fore legs are nearly white, much more so than in *E. slossoniæ*. In its venation *E. nivalis* differs from the Floridan species as follows: Fore wings, the second subcostal branch arises much nearer the anterior discal vein, only one-third the way to the origin of the third subcostal branch, the distance between the origin of the second and third being twice as great as in *E. slossoniæ*. There are also slight differences in the direction of the anterior discal vein, and in the distance between the origins of the first and second median venules. In the hind wings the first and second subcostal divide at the origin of the upper discal; in *E. slossoniæ* they divide far beyond the origin of the upper discal and one-third the way out to the apex of the wing. The direction of the two discal venules differ, these being more oblique in the Cuban species. Length of fore wing 14 mm.; of body 12 mm.

NOTES ON ICHTHYURA Hüb. (Melalopha Hüb.)

By HARRISON G. DYAR, Roxbury, Mass.

Mr. Neumoegen and myself have reached conclusions in regard to the species of *Ichthyura* very similar to those set forth by Dr. Packard in the March number of the NEWS. There are several differences in our conclusions, which I would like to notice. *Ichthyura inornata* Neum. We give this form specific rank. In markings it does not differ from *I. vau* var. *ornata*, but the large size and absence of the thoracic patch entitle it to more than the rank of a local race. While I believe that Dr. Packard is right in considering such forms as *luculenta* and *ornata* as local races, I think he has carried this idea too far in the present instance.

Ichthyura jocosa Hy. Edw.—We give this specific rank also. Only the types are known and differ from *inclusa* in the absence of the silvery part of the outer line. It may prove to be a race of *inclusa* but it seems premature to so refer it now.

Ichthyura bifiria Hy. Edw.—I cannot at all agree with Dr. Packard in his reference of this form. It is not allied to *I. brucei* but on the contrary is close to *I. vau*, and is probably the local race of it inhabiting the Sierra Nevada of California. I have bred the larva, and the description appeared in these pages in January, 1892.

I have been mistaken in my identification of *I. brucei* in my reference to that form in ENT. NEWS, iii, 6, and "Can. Ent.," xxiv, 180.

Ichthyura inversa Pack.—After carefully reading the descriptions and examining a typical specimen of *inversa* which Dr. Packard kindly loaned me, I am satisfied that this name refers to *palla* French. Prof. French's description is very careful, but seems to differ somewhat from the specimens which he has distributed. It applies exactly to Dr. Packard's specimen of *inversa* which was marked as "compared with type." In accordance with these ideas I would arrange the North American species of *Ichthyura* as below. This is the arrangement adopted by Mr. Neumoegen and myself in a paper now in the hands of the editor of the "Canadian Entomologist."

Melalopha apicalis Walk (unidentified).

§ 1 Lines of primaries anastomosing, the second and third lines distinctly united.

1. *M. jocosa* Hy. Edw.
2. *M. inclusa* Hüb.
   americana Harr.
   var *inversa* Pack.
   palla French.
3. *M. strigosa* Grt.
   var. *luculenta* Hy. Edw.
4. *M. inornata* Neum.
5. *M. vau* Fitch.
   indentata Pack.
   var. *ornata* G. & R.
   incarcerata Boisd.
   var. *bifiria* Hy. Edw.
   var. *astoriæ* Hy. Edw.

§ 2 Lines not anastomosing; second and third separate.

6. *M. multnoma* Dyar.
7. *M. brucei* Hy. Edw.
8. *M. alethe* Neum. and Dyar ms.
9. *M. albosigma* Fitch.
   var *specifica* Dyar.

NEW SPECIES OF WEST AFRICAN DREPANULIDÆ.

By W. J. HOLLAND, Ph.D., Pittsburg, Pa.

(All of the species described in the following paper come from the Valley of the Ogove River.)

Genus **CALLIDREPANA** Feld.

1. **C. oculata** sp. nov. ♂.—Body and antennæ pale ochraceous; eyes black. Upperside: fore wings ochraceous, clouded on the costa and the outer margin with vinaceous. At the end of the cell there is a minute white spot; below the apex on the outer margin there is a minute ocellus pupiled with black, margined with yellow, about which there is a darker line of vinaceous. This ocellus is incomplete on the lowerside, where it fuses with a smaller blackish spot; there are two small blackish spots near the outer angle. The secondaries are whitish on the costa, shading on the outer and inner margins into ochraceous.

Underside: both wings are pale yellowish white, the primaries narrowly clouded on the outer margin with roseaceous. Expanse 24 mm.

2. **C. brunneola** sp. nov. ♂.—Body brownish above, pinkish white below.

Upperside: primaries pale rosy-brown, marked with a number of obscure darker striæ, ornamented with a regularly curved basal transverse line convex outwardly, and a curved line running from the apex to the middle of the inner margin, convex inwardly and double at the apex. From the end of the cell a dark shade extends parallel to the costa as far as the outer curved line. There is a very narrow zig-zag submarginal line. The secondaries are yellowish white on the costa and rosy-brown on the remainder of the wing. The rosy-brown area is marked with striæ as the primaries, and the outer transverse line of the primaries is produced upon the secondaries as a transverse median line widening and becoming darker toward the inner margin, near which it fuses with a dark brown spot margined externally with whitish. The submarginal line of the primaries is extended upon the secondaries. The fringes of both wings are dark brown.

Underside: yellowish, laved on the costa of the primaries and the outer margin of the secondaries with bright pink. Expanse 20 mm.

Genus **PLEGAPTERYX** H.-S.

3. **P. fasciata** sp. nov. ♂.—Antennæ and front pale fawn; upperside of thorax lighter; abdomen fawn.

Upperside: primaries greenish gray, clouded on the outer margin with olivaceous, interrupted below the apex on the margin with an angulated greenish gray line. The middle of the wing is crossed by a dark brown band, irregularly produced at the end of the cell, and interrupted by a pale spot; in the upper margin of which is an olivaceous dot. The secondaries are dark brown at the base like the thorax, pale olivaceous about the middle of the wing, clouded with olivaceous on the outer margin, and crossed near the middle of the wing by a twice-curved narrow median line, which is widest and most distinct near the inner margin.

Underside: primaries sooty; the costa bright reddish brown; the middle of the outer margin and the inner margin grayish. Secondaries rosy-brown, with the outer angle suffused with dark brown, the middle of the wing crossed by an interrupted median transverse line. Expanse 32 mm.

4. **P. purpurascens** sp. nov. ♂.—Antennæ testaceous; front and thorax maroon; upperside of abdomen bluish black; lowerside of thorax and abdomen brownish.

Upperside: primaries rich maroon, crossed by a transverse basal and transverse median line of greenish purple, between which, at the end of the cell, there is a subpyriform spot of greenish purple, pupiled with blackish. The transverse median line fuses near its costal extremity with two broad greenish purple rays, the upper one of which sweeps outwardly to the apex, which is accentuated by a triangular spot of the same color; the lower ray fuses near the outer margin with a greenish purple line,

which extends along this margin about its middle. In addition, there are near the outer angle three submarginal greenish purple spots. The secondaries are greenish purple from the base two-thirds of the distance to the outer margin, which is heavily bordered with maroon. These wings are also crossed by a narrow, irregularly curved, transverse median line.

Underside: primaries sooty, margined externally with bluish, and laved near the apex with bright ferruginous. The secondaries are ferruginous, with the costa marked with bluish black. Both primaries and secondaries are traversed by a narrow transverse median line. Expanse 34 mm.

5. **P. obscura** sp. nov. ♂.—Antennæ, front, thorax and abdomen pale ferruginous; lowerside of thorax and abdomen bright ochraceous.

Upperside: primaries pale ferruginous profusely marked with brownish spots and striæ. Secondaries, like the primaries, traversed by a broad, diffuse median band running from the costa across the end of the cell to the middle of the inner margin.

Underside: bright ochraceous, clouded near the apex of the primaries and on the outer margin of the secondaries with brown; both wings traversed by an obscure purplish transverse line, which extends from the apex of the primaries to the middle of the inner margin of the secondaries. Both wings are marked with spots and striæ as upon the upperside. Expanse 45 mm.

6. **P. partita** sp. nov. ♂.—Antennæ testaceous; front and thorax ferruginous; upperside of abdomen fawn; lowerside of thorax, abdomen, and legs bright ochraceous.

Upperside: primaries and secondaries uniformly reddish fawn, with the outer margins broadly softened with grayish. This pale outer area is divided from the darker inner area by an obscure geminate blackish line, which runs from before the apex of the primaries to the inner margin of the secondaries, terminating here two-thirds of the distance from the base. There is a small black discal dot on the primaries.

Underside: the primaries are dark ferruginous, except on the costa near the base, where they are bright ochraceous. The secondaries are bright reddish ochraceous. The dark transverse line of the upper surface reappears on the underside, but more obscurely, and there is a faint discal dot at the end of the cell in both wings. Expanse 45 mm.

7. **P. subsplendens** sp. nov. ♂.—Antennæ brownish; front brown; collar greenish; upperside of thorax dark olivaceous; upperside of abdomen brownish olivaceous; underside of thorax and abdomen bright greenish yellow; legs tinged with rosy.

Upperside: primaries pale olive, with darker marks and cloudings. A dark olive ray runs along the costa of the primaries and is produced to the outer margin below the apex. There is a reddish transverse basal and transverse limbal line and a small dark brown discal dot at the end of the cell. The transverse limbal line of the primaries is produced as a broader curved line upon the secondaries, the ground color of which is like that of the primaries, save on the costa, where it is replaced by pale yellow.

Underside: primaries and secondaries are bright chrome-yellow, marked with heavy maroon cloudings and striæ, and crossed by the same transverse lines which appear on the upperside, but which are very much more distinct upon the lowerside. Expanse 41 mm.

COPTOPTERYX gen. nov.

♂.—Palpi short, compressed, produced downwardly at the extremity. Antennæ half as long as the costa of the primaries, minutely pectinated, the pectinations being longest about the middle. The tibiæ of the hind legs are slightly swollen, and armed with double spurs at the extremity, and also provided with a single spur above this pair. The primaries have the costa angulated beyond the middle; the apex is produced, the outer margin is deeply excised below the apex and at the outer angle. The secondaries have the outer angle obtuse and the outer margin sharply produced about the middle and deeply excised before the anal angle. The primaries and secondaries are marked with translucent angulated discal spots at the end of the cell. The abdomen is produced one-third of its length beyond the inner margin of the secondaries. The prevalent colors of the genus are browns and olive-grays. Type *C. specularia* Holl.

8. **C. specularia** sp. nov. ♂.—Antennæ, front, and collar pale olive; patagiæ and upperside of thorax dark olive; upperside of abdomen blackish; lowerside of thorax and abdomen and legs fawn.

Upperside: primaries brownish olive, clouded with blackish upon the inner margin and marked with grayish upon the costa about the middle and before the apex. Here wings have a moderately large hyaline triangular spot at the end of the cell, and a zig-zag, subbasal, transverse line and a narrow limbal line of black extending from below the costa, where it is sharply curved outwardly to the inner margin two-thirds of the distance from the base. The apex is truncate. The outer margin is deeply excised and serrate below the apex, sharply produced at the middle, and excised and slightly serrate at the outer angle. The secondaries are blackish, marked with pale olivaceous spots on the inner margin and crossed by transverse median and transverse submarginal darker lines. At the end of the cell there is a small hyaline spot. The anal angle is deeply serrate at the ends of the nervules.

Underside: primaries grayish fawn on the costa, clouded on the inner margin with olivaceous, crossed by a narrow submarginal line running from the costa before the apex to the inner margin two-thirds of the distance from the base. Beyond this line the wings are clouded with olivaceous, forming a dark subquadrute spot at the apex, succeeded by a triangular spot and a heavy shade near the region of the outer angle. The secondaries are oblivaceous, clouded with blackish and crossed by a blackish, transverse, limbal line. Expanse 45 mm.

9. **C. homochroa** sp. nov. ♂.—Antennæ and front reddish fawn; patagiæ and upperside of thorax dark brown; abdomen and underside of thorax and legs reddish fawn.

Upperside: the primaries and secondaries are reddish fawn, slightly paler toward the outer margin. The primaries are crossed by obscure subbasal and limbal transverse lines. The secondaries are crossed by a more sharply defined transverse median line. At the end of the cells in both wings there are narrow angulated hyaline spots beyond which toward the outer margin in both wings there is a small brown spot.

Underside: both wings grayish fawn, profusely marked with blackish spots and striæ; both traversed by narrow blackish limbal lines. On the underside the hyaline spots are defined externally by narrow blackish lines. Expanse 43 mm.

10. **C. Propinqua** sp. nov. ♂.—The wings in this species are broader than in the two preceding species, and far less sharply excised on the outer margins. Antennæ testaceous; collar, thorax and upperside of abdomen, dark brown. Lowerside of thorax and abdomen obscure ferruginous.

Upperside: primaries dark brown, with the costa and apex marked with ashen and traversed by a zig-zag, subbasal and narrow limbal line, between which there is a darker clouding. The outer margin is preceded by some obscure dark markings; the hyaline spot is defined externally by narrow light lines. The secondaries are darkest about the middle where they are crossed by a narrow transverse median line and are ornamented with obscure submarginal cloudings.

Underside: primaries cinereous, with dark olivaceous spots and striæ on the inner margin near the base, and heavily clouded with dark brown near the outer angle. A narrow transverse limbal line extends from the apex (where it is accentuated by two subtriangular brown spots) to the inner margin three-fourths of the distance from the base. The secondaries are ferruginous, clouded with olivaceous, and crossed by a straight transverse limbal line, black, defined externally and internally by pale lilac. Expanse 37 mm.

11. **C. (?) cinereo-marginata** sp. nov. ♂.—Antennæ testaceous; front rufous; upperside of thorax and abdomen dark brown, lowerside cinereous.

Upperside: primaries and secondaries dark brown on the basal half. The outer half of the primaries is dark cinereous, the outer half of the secondaries pale cinereous, the division between the pale outer area and the dark inner area being obscurely marked on the primaries and sharply defined on the secondaries. The primaries are falcate, and sharply produced at the extremity of the third median on the outer margin. The secondaries have the outer margin evenly rounded, forming a somewhat acute angle with the inner margin.

Underside: both wings grayish ferruginous with a small white spot near the margin beyond the end of ths cell, an obscure median transverse line on the secondaries. Expanse 38 mm.

I refer this species with doubt to the preceding genus, owing to the form of the secondaries, but decline at present to erect another genus for its reception.

CIROPTERYX gen. nov.

♂.—Palpi very minute, appressed. Antennæ half as long as costa, minutely pectinated. Primaries elongated; costa nearly straight, or very slightly curved; apex truncate; outer margin produced before the middle, then rapidly returning to the inner margin, which is half as long as the costa. The outer margin after the point where it is most strongly produced, forms a line to the inner angle, which is nearly parallel to the costa. The secondaries are subpyriform, with the outer margin regularly curved, or slightly produced about the middle of the outer margin. The abdomen is produced for fully one-third of its length beyond the inner margin of the secondaries and is clothed at its extremity with two broad and long tufts of hair. The colors of the genus are prevalently browns and olives. Type *C. viridifascia* Holl.

12. **C. viridifascia** sp. nov. ♂.—Antennæ; thorax, and abdomen brownish cinereous; underside of thorax dark ferruginous; underside of abdomen pale vinaceous; anal tufts lighter.

Upperside: primaries and secondaries lilacine-brown, both crossed on the middle by a broad and somewhat irregular band of olive-green, margined externally and internally by lines of dark brown. There is a small brown discal dot at the end of the cell of the primaries.

Underside: both primaries and secondaries are dark ferruginous, with the discal area of the primaries clouded with blackish. The secondaries are slightly paler than the primaries. Expanse 30 mm.

13. **C. ochreata** sp. nov. ♂.—Antennæ testaceous; front ferruginous; upperside of thorax and abdomen fawn; pectus reddish; underside of abdomen and thorax pale ochraceous, legs concolorous.

Upperside: primaries pale greenish olivaceous, clouded at the base and on the outer margin with lilacine-brown. Secondaries brownish with the costa and transverse median fascia pale stramineous. There is a small discal dot at the end of the cell on both wings.

Underside: primaries and secondaries bright ochraceous, with the outer third heavily shaded with lilacine-brown, the darker area being defined by a straight line running from the apex of the primaries to near the middle of the inner margin of the secondaries. The bright inner ochraceous area of the wing is marked with obscure reddish spots and striæ. Expanse 29 mm.

ANCISTROTA Hüb.

14. **A.** (?) **geometroides** sp. nov. ♂.—Antennæ and entire body luteous-gray. Upperside of primaries luteous-gray, sprinkled with minute pale brown striæ and clouded with the same color on the middle, and at the end of the cell traversed by a narrow submarginal line, running from before the apex on the costa to the inner margin two-thirds of the distance from the base. Secondaries darker, vinaceous, with some submarginal cloudings and a transverse dark brown line running from the outer angle to the middle of the inner margin. The secondaries are somewhat produced opposite the end of the cell at the extremity of the third median nervule, the outer margin forming an obtuse angle with the inner margin.

Underside: both wings are pale ochraceous, with a minute discal dot at the end of the cells and a narrow dark brown submarginal line located as on the upper surface, but more distinct. Near the outer angle of the primaries and on the outer margin of the secondaries, the wings are slightly suffused with pinkish. Expanse 40 mm.

15. **A.** (?) **bimaculata** sp. nov. ♂.—Antennæ and upperside of the body pale brown; legs and lowerside of abdomen rosy.

Upperside: wings pale brown with some obscure blackish markings on the costa before the apex. A straight geminate brown line runs from the apex to the inner margin, two-thirds of the distance from the base, and is produced upon the hind wings, terminating about the middle of their inner margin. Upon the primaries near the origin of the first median nervule below the cell, there is a large dark brown suboval spot.

Underside: the primaries and secondaries are bright ochraceous, broadly laved with rosy, and faintly marked with brownish spots. There is a minute discal dot on each wing and on the primaries there is a faint line running from the apex toward the outer third of the inner margin, which it does not quite touch. The inner margin of the primaries is whitish, shining. The outer margin of the secondaries near the anal angle is tinged with whitish. Expanse 44 mm.

I refer the two foregoing species with doubt to the genus *Ancistrota*, with which they more nearly agree than with any other genus known to me.

DREPANA Schrank.

16. **D.** (?) **bioculata** sp. nov. ♂.—Primaries falcate, deeply excised below the apex on the outer margin, with the outer angle broadly rounded; the secondaries subovoid. Antennæ black; body pale fawn; lowerside of abdomen ochraceous.

Upperside: primaries fawn, tinged with ochraceous near the base and marked by a conspicuous dark black patch of raised velvety-black scales below the cell about the middle of the inner margin. Secondaries rosy.

Underside: both wings pink with a small black discal dot at the end of the cell. Expanse 30 mm.

MEGADREPANA gen. nov.

Palpi minute; antennæ one-third the length of the costa of the primaries, heavily pectinated for three-fourths of the distance from the base; extremity of the culmen without setæ; costa of primaries strongly arcuate before apex; apex strongly falcate, inner angle obtuse. Secondaries subtriangular with the outer margin evenly rounded, abdomen not projecting beyond the outer margin of the secondaries. The lower radial nervule of the primaries has its origin at the middle of the cell, where the disco-cellulars form an acute angle with its vertex toward the base. The upper radial has its origin before the end of the cell and forms, with the disco-cellular, the upper angle of the cell. In the secondaries the lower radial rises at the middle of the end of the cell, and the upper radial at its upper angle, the subcostal in the secondaries arising before the end of the cell. Type *M. cinerea* Holl.

17. **M. cinerea**, sp. nov. ♂.—Antennæ testaceous; front and collar pale gray; thorax and abdomen dark gray.

Upperside: primaries and secondaries are obscure ashen-gray with some rusty markings near the apex of the primaries, and an obscure transverse median and limbal line upon both wings. The outer margins of the secondaries are broadly darker than the body of the wing.

Underside: both wings are cinereous, with the costa of the primaries before the apex marked with ferruginous. The lines of the upper surface reappear upon the lowerside, but more distinctly, and in the secondaries the limbal line is diffuse, accentuated with bright ferruginous ocelli, which are more or less obscurely defined. Expanse 60 mm.

GOODIA gen. nov.

♂.—Palpi minute, compressed, last joint extremely minute; antennæ broadly pectinated for three-fourths of the distance from the base, end of culmen naked; body heavily clothed with hair; legs short, hairy. Primaries strongly arcuate before the apex, falcate; outer margin strongly concave; outer angle rounded. Secondaries substriangular with the outer angle rounded, the outer margin strongly convex, the anal angle more or less produced, the inner margin straight. In the primaries, the lower radial arises from the middle of the cell, the upper radial from the upper angle. The disco-cellulars do not form an angle with each other at the end of the cell. In the secondaries, the disco-cellulars form an angle below the origin of the lower radial, and the subcostal has its origin very slightly in advance

of the upper radial. The vestiture of the wings, especially at the base, is heavy. At the ends of the cells there are one or more minute hyaline spots.

♀.—The female differs from the male in having the antennæ very slightly pectinated and quite short, and the primaries relatively broader, with the outer margin rounded from the outer angle and very slightly produced at the apex. Type *G. nubilata* Holl.

18. **G. nubilata** sp. nov. ♂.—Antennæ testaceous; front brown; collar whitish; upperside of thorax and abdomen brownish ochraceous; lowerside of thorax and abdomen brown.

Upperside: primaries wood-brown, with the costa for two-thirds of the distance from the base ashen-gray, interrupted by a dark spot on the costa near the middle of the wing. At the end of the cell, near the middle, is a small hyaline spot, and at the lower angle, a very minute hyaline spot. The wing is crossed from before the base to the inner margin by a limbal series of brownish hastate markings located on the ervules and connected by very narrow waved brown lines, which are defined outwardly by stramineous. The fourth of these hastate marks, reckoning from the inner margin, is broadly surrounded by stramineous; there are also some pale subapical markings, and an obscure, curved subbasal line. The secondaries have the same color as the primaries, but paler on the costa, and the limbal series of hastate spots and curved lines is continued from the primaries. The fringes are brownish.

Underside: the wings are cinereous, shaded with pale ochraceous, and heavily clouded near the middle and on the outer margin with dark brown and profusely irrorated with small brown spots and striæ. The female does not differ from the male, except in form. Expanse: ♂, 76 mm.; ♀, 90 mm.

19. **G. lunata** sp. nov. ♂.—Front dark brown; collar whitish, margined behind with dark maroon; thorax and abdomen above pale reddish brown, below dark brown.

Upperside: primaries with a narrow lunulate mark at the end of the cell, defined internally by pale ochraceous, and externally by dark maroon. The prevalent color of the primaries is brown, shading into lilacious between the median nervules, into umber beyond the cell. Upon the third median nervule beyond the cell is a diffuse ochraceous spot. The apices of the wings are pale luteous. There is a faint marginal and submarginal line, the latter defined inwardly by a paler line, which is succeeded toward the base by a narrow line of maroon, which is produced inwardly on each of the nervules in the form of small hastate markings. The secondaries are wood-brown clouded with ochraceous, and the marginal lines and hastate markings of the primaries are continued upon the secondaries.

Underside: primaries and secondaries wood-brown, clouded with lilacine on the cell and outer margin, and with fuliginous below the cells and

just beyond their extremities. The primaries have a bright subtriangular moon spot near the middle of the cell and a similar small oval spot on the costa near the apex. The maroon markings, which define the hyaline spot on the upper surface, reappear on the under surface. In addition, the lowerside of the wings is very profusely marked, especially upon the costa of the secondaries, with small maroon spots and striæ. Expanse 80 mm.

20. **G. vestigiata** sp. nov. ♂.—Front dark brown; collar white; upperside of thorax and abdomen pale cinereous; pectus rosy; lowerside of abdomen dark brown.

Upperside: primaries dark cinereous, shading into pale cinereous about the base and near the apex. There are four minute hyaline spots, two just beyond the end of the cell, and two just within the end of the cell, very minute, and near each other. There are also one or two minute hyaline spots near the apex below the costa. The two minute hyaline spots at the end of the cell are surrounded by pale luteous and the two larger spots beyond the end of the cell are likewise thus surrounded, and between these two luteous spots projecting outwardly, there is a hastate luteous mark. The whole arrangement of these spots strongly resembles the footprint of an animal in miniature. Beyond these markings there is a crenulate limbal line running from the costa before the apex to the inner margin, two-thirds of the distance from the base, defined inwardly and outwardly by pale cinereous. There are also some obscure marginal lines. The secondaries are somewhat paler than the primaries, and at the end of the cell, there are three hyaline marks, the innermost of which are the largest, and they are surrounded as the hyaline spots upon the primaries by luteous areas. The limbal and marginal markings of the primaries are continued upon the secondaries.

Underside: the wings are darker with the yellowish markings surrounding the hyaline spots and the limbal lines more clearly defined. Expanse 70 mm.

The genus *Goodia*, which I take pleasure in naming after my excellent friend, who has done much to elucidate the natural history of West Africa, is referred to the Arepanulidæ, with slight hesitancy, though the neuration and form of the wings is characteristically drepanulid. The antennæ in their form suggest a relationship to the genus *Copaxa* among the Saturnidæ.

The typical species of the genus is in the collection of Mr. Herbert Druce, of London, as well as in my own.

THYMISTADA Walk.

21. **T. erosa** sp. nov. ♂.—Antennæ moderately long, heavily pectinated; front brown; thorax and abdomen fawn.

Upperside: primaries lilacine-gray with some obscure brown markings on the costa, an obscure transverse median and transverse limbal brown line; the outer margin sharply produced between the second and third

nervules, and above this tooth-like projection there is a series of small brown spots. The fringes are dark brown, checked with ashen at the ends of the nervules. The secondaries are colored like the primaries. The outer margin is eroded before the anal angle. There are two small obscure brown marks beyond the origin of the second median nervule.

Underside: both wings pale cinereous, profusely marked with minute blackish striæ, the posterior margin of the primaries being pale, immaculate and shining. Both wings have a minute discal dot at the end of the cell, and the primaries are crossed by an incomplete transverse limbal line. The fringes are dark brown. The female is like the male, and the wings are relatively broader, and more deeply eroded at the angle of the secondaries. Expanse 33—35 mm.

22. **T. miserrima** sp. nov. ♂.—Costa strongly arcuate; apex of primaries broadly produced opposite the end of the cell. Secondaries subquadrate, the outet margin being strongly produced at the extremity of the radial. The prevalent color of the upper surface is pale olivaceous sprinkled with minute darker spots and striæ. There are two small hyaline spots on the primaries, one located beyond the end of the cell, the other just below the cell at its extremity.

Underside: both wings obscure ashen with minute spots and striæ covering their entire surface. Expanse 25 mm.

I refer both of the foregoing species to Walker's genus *Thymistada*, with the type of which *Terosa* agrees very well. *T. miserrima* probably does not belong here, but may be a representative of a new genus.

EXPLANATION OF PLATE IX.

Fig. 1. *Goodia vestigiata*, sp. nov.
" 2. *Goodia lunulata* sp. nov.
" 3. *Goodia nubilata* sp. nov.
" 4. *Megadrepana cinerea* sp. nov.
" 5. *Thymistada erosa* ♂ sp. nov.
" 6. *Plegapteryx fasciata* sp. nov.
" 7. *Plegapteryx purpurascens* sp. nov.
" 8. *Ancistrota* (?) *geometroides* sp. nov.
" 9. *Ancistrota* (?) *bimaculata* sp. nov.
" 10. *Drepana* (?) *bioculata* sp. nov.
" 11. *Callidrepana brunneola* sp. nov.
" 12. *Callidrepana oculata* sp. nov.
" 13. *Thymistada miserrima* sp. nov.
" 14. *Ciropteryx viridifascia* sp. nov.
" 15. *Plegapteryx subsplendens* sp. nov.
" 16. *Coptopteryx* (?) *cinereo-marginata* sp. nov.
" 17. *Thymistada erosa* ♀ sp. nov.
" 18. *Coptopteryx specularia* sp. nov.
" 19. *Coptopteryx homochroa* sp. nov.
" 20. *Coptopteryx propinqua* sp. nov.

A NEW ACHARUTES.

By F. L. HARVEY, Orono, Me.

Acharutes brevispinus n. sp.—Ground color pale cream above and dirty white or grayish below; covered with lavender or pale purple patches and streaks; darker above. Head, above and below, and the antennæ, darker than the rest of the body; a spot on the head between the eye patches, and another on the neck, darker; a spot of the ground color on each side of the dark spot on the neck; other less marked spots on the head and antennæ, giving them a mottled appearance. Eye patches black, kidney-shaped, rather conspicuous, and remote from the base of the antennæ; a dorsal median, longitudinal band composed of five obscure stripes; a median darker one, each side of which is an interrupted lighter stripe composed of spots of the ground color; outside of these an obscure stripe, darker than the general body color; underside of the body (excepting the head), the legs and elater pale grayish blue; the disposition of the color patches is variable in specimens of the same size, and the depth of color varies with the sex and age; the young are paler. What we take to be the females are larger, lighter colored, more sluggish, and the abdomen is wider at the sixth segment in proportion to the length. Body fusiform, robust, widest at the sixth segment. Last abdominal segment obtuse. Body sparingly clothed with stout, curved hairs. Head nearly round, truncated behind and obtusely produced in front, broader than the prothorax and mesothorax. Antennæ stout, slightly longer, or about as long as the head; basal joint broader than the others, and somewhat longer than broad; second joint a little longer than broad, widest at the distal end; third joint about as long as broad; widest where it joins the fourth: fourth one-half longer than third, widest at the base, ovate, obtuse at the end; third and fourth separated by an obscure suture, and together appearing as a long, terminal, oblong segment; the two basal segments have well marked, deep sutures. Ratio of the joints nearly 9:10:12:17. The basal joints each bear about two pairs of hairs and the terminal segment more. Eye patches black, conspicuous, reniform, remote from base of antennæ. Length to width as 12:7. Last abdominal segment prominent, broadly rounded at the end, bearing inconspicuous anal spines, located for a part upon minute warts, and only about one-third the length of the hairs clothing the body. Legs stout, rather short and bearing stout claws 60 mm. long; the shorter claw half as long. Elater short, broad at the base; as broad as long; basal part as long as the others taken together; terminal joint one-fifth the length of the second, slender and pointed.

Measurements.—Total length 1.725 mm.; head .23 mm. long, 2.25 mm. broad; antennæ, 240 mm.; ratio of joints nearly 4:5:6:8; body 1.5 mm.; segments nearly in the ratio 6:8:8:8;9:8:8;5:5; breadth of body at sixth segment .575 mm.; legs with claw .36 mm.; elater 230 mm.; ratio of segments 5:4:1; large claw .06 mm.; small claw .06 mm.; anal spines .015 mm.

Distinguishing characters.—Small, obscurely triangular head, truncated behind, spotted, darker than the body; long thick antennæ, dark colored, with a short broad basal segment, and a long oblong-ovate ter-

minal one; narrow prothorax and metathorax, the former bearing a dense, dark and two lighter spots; the dorsal band made up of three darker and two lighter stripes; the fusiform body broad at the sixth segment, and the obtuse rounded terminal segment of the body bearing short, inconspicuous anal hooklets; size from 1.5 mm.—2.5 mm.

A sluggish species with weak elater, which it does not often use, preferring to feign death and roll up like a wood louse. It rarely jumps over two inches.

Exceedingly abundant during the whole Winter of 1891 and '92 in celery stored in the cellar. It was also noticed out of doors in the Autumn in potato-hills. It probably lives out of doors, and was carried to the cellar with celery and the dirt used to cover it; exceedingly abundant. Many hundreds seen and many examined. Associated with *Tomocerus plumbeus*, *Lepidocyrtus metallicus*, *Lipura ambulans*, *Isotoma tricolor*, *Templetonia americana* and an undetermined species of each *Entomobrya* and *Isotoma*.

Relationship.—The presence of anal spine places this species in Group B of Lubbock's Classification. We don't know how carefully Lubbock's species were examined, but the spines of our species might readily be overlooked, unless searched for with a high power. Apparently more related to *Acharutes marmoratus* Packard than any described American species, but readily distinguished from it by the short anal hooks, larger size, thicker set body, color and structure of the terminal segment of the elater.

The accompanying drawing of *A. brevispinus* n. sp. (figs. 1 and 2) were made by Mr. Emerton from live specimens. They show the head too oval and not broad enough behind the prothorax is too long and does not show the spots on the neck usually seen.

For purposes of comparison we add cuts of what we take to be *A. marmoratus* Packard (figs. 3 and 4), and of *A. nivicola* Fitch (figs. 5 and 6). The latter has not been figured so far as we know, and as it is used by Packard as a standard for comparison in describing the American species of *Acharutes*, we regard the figures important. The cuts of *A. nivicola* are drawn to a larger scale than the others. *A. brevispinus* usually exceeding *A. nivicola* in size. The species we take to be Packard's *A. marmoratus* grows much larger than his description indicates, being nearly 2 mm. in full-grown specimens. Found by us on *Agarics* and *Boleti*. We are not sure but what *A. boletivorous* Packard and *A. marmoratus* Packard are the same species. Our specimens have the ovate third joint of the elater, which seems to be the most important difference.

Fig. 1.

Fig. 2.

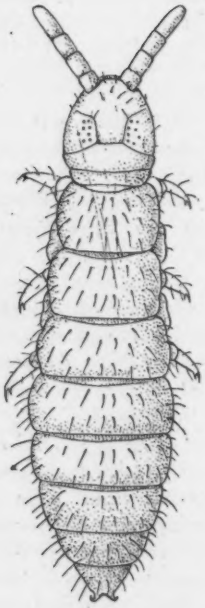


Fig. 6

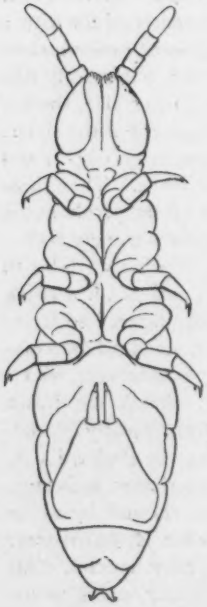


Fig. 5.

Fig. 3.

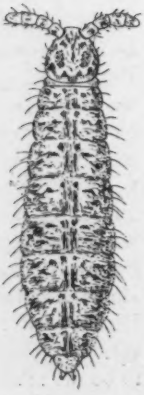


Fig.

Figs. 1 and 2, A. BREVISPINUS n. sp. Figs. 3 and 4, A. MARMORATUS Fitch.
Figs. 5 and 6, A. NIVICOLA Fitch.

EXCHANGES

Not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at end of the column, and only when necessary those at the top (being longest in) are discontinued.

Coleoptera.—Price-lists wanted.—J. H. Bomberger, Box 76, Columbiana, O.

Lepidoptera.—Cocoons of *Attacus columbia* Smith to exchange for native lepidoptera, or for books on North American lepidoptera.—Robert H. Wolcott, Phi Delta Theta House, Ann Arbor, Mich.

Lepidoptera.—I am studying the Noctuid genera *Euclidia*, *Drasteria* and *Litosea*. Specimens bought, exchanged or determined.—M. V. Slingerland, Cornell Insectary, Ithaca, N. Y.

Lepidoptera.—Wanted to purchase cocoons and larvæ from different parts of U. S. State name and price.—E. J. Kruegeman, 54 May St., Lake View, Chicago, Ill.

Lepidoptera.—Wanted to exchange, papers on N. Am. Lepidoptera for Noctuidæ or Heterocera generally. Noctuidæ named for privilege of retaining desiderata.—John B. Smith, New Brunswick, N. J.

Coleoptera of N. Am. and Mexico wanted by purchase or exchange; large collection.—Fred. C. Bowditch, Tappan St., Brookline, Mass.

Lepidoptera.—Wanted, *Plusia balluca*, *metallica* and *ampla;* also the Hydrœcias. Have some of the rarer eastern Noctuids for exchange.—Henry Bird, Rye, N. Y.

Coleoptera and **Hemiptera**, European and exotic, also postage stamps of Roumania, offered for American Hemiptera-Heteroptera unnamed.—A. L. Montandon, Strada Viilor filarete, Bucarest, Roumania.

Phryganidæ wanted; will exchange choice Coleoptera and Lepidoptera from Kansas, Colorado and New Mexico (Prof. F. H. Snow's collecting) for Caddice-flies, U. S. or exotic.—Vernon L. Kellogg, Univ. of Kansas Lawrence, Kansas.

Lepidoptera.—Good exchange or cash given for specimens of *Nadata doubledayi* Pack. Also wanted any of the rarer Notodontidæ and Limacodidæ.—Harrison G. Dyar, 599 Broadway, New York City.

Coleoptera.—I wish to obtain Entomological literature in any language, especially that treating of Coleoptera and for works not in my possession will give good insects from the West and from Alaska, mostly Coleoptera. —H. F. Wickham, Iowa City, Iowa.

Lepidoptera.—I have for exchange *C. semidea*, *A. montanus*, *S. modesta* (imagos and pupæ), and other White Mountain material. The rarer Sphingidæ preferred.—R. Ottolengui, 115 Madison Ave., N. Y.

Lepidoptera (diurnal) of Iowa to exchange for species of same order not in my collection.—Henry G. Willard, Grinnell, Iowa.

Celeoptera.—Price-lists wanted.—Dr. E. B. Stephens, Plymouth, Mass.

Cynipidæ.—Named or unnamed Cynipidæ wanted by purchase or exchange. Always accompany the flies with their galls when possible.—C. P. Gillette, Ft. Collins, Col.

Orthoptera.—For exchange: Mexican Lepidoptera, unmounted, for literature, in any language, on N. A. Orthoptera. Also Indiana Orthoptera for others from any part of N. A.—W. S. Blatchley, Terre Haute, Ind.

Orthoptera.—I desire to procure, by purchase, exchange, or for identification, specimens of the genus *Spharagemon* from all parts of the country. —Albert P. Morse, Wellesley College, Wellesley, Mass.

Lepidoptera.—Cocoons and pupæ of the rarer moths, *luna*, *imperialis*, *regalis*, *P. fraterna*, *P. pithecium*, etc.; also many fine set specimens; hybrids from *selene* et *luna*, *ceanothi* et *cecropia*, *Gloveri* et *cecropia*. List exchanged.—Emily L. Morton, Newburgh, N. Y. (New Windsor delivery).

Lepidoptera.—I will exchange or sell specimens (imagos or larvæ) from Illinois for those of other localities. Have on hand prepared sets of last year's collecting.—Arthur J. Snyder, North Evanston, Ill.

Lepidoptera.—Prepared larvæ, live pupæ, Coleoptera and Reptiles from America desired in exchange for species of Europe.—A Voelschow, Schwerin in Mecklinburg, Germany.

Lepidoptera, Coleoptera and **Hemiptera** of Colorado for exchange.—E. V. Beales, 1650 Larimer Street, Denver, Col.

Coleoptera for exchange: good species in perfect condition. Cicindelidæ, Endomychidæ and *Leptura* are especially wanted.—L. B. Walton, Box 123, Keuka College, Yates County, N. Y.

Lepidoptera.—I wish to exchange large, sound pupæ of *Cecropia* and *Polyphemus* for pupæ or imagines of almost any other species of Lepidoptera.—James Tough, 234 S. Water Street, Chicago.

Lepidoptera.—American diurnals wanted. Will buy or exchange. Hesperidæ and Lycænidæ especially desired.—Henry Skinner, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.

Lepidoptera.—A few rare Indian Lepidoptera to exchange for rare species from the Northwest.—Levi W. Mengel, Reading, Pa.

Odonata.—Dragonflies. Species not in my collection wanted from all parts of the world. N. American species given in exchange, or named by special agreement.—P. P. Calvert, Acad. of Nat. Sciences, Phila., Pa.

Lepidoptera.—Imagines and pupæ of New England species for pupæ of *Megathymus yuccæ* and *Sphinx catalpæ*.—Field Brothers, Guilford, Ct.

Coleoptera and **Lepidoptera.**—I desire to exchange specimens with collectors in the South and West who wish to extend their collections; correspondence solicited.—F. W. Russell, M.D., Winchendon, Mass.

I am desirous of collecting in any of the Orders in Northwestern Ohio; write me.—N. Sager, Jr., Herring P. O., Allen Co., Ohio.

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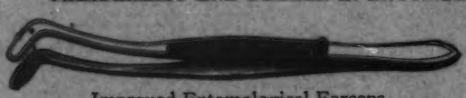

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